**What Is Claimed Is:**

1. An ultrasonic transducer, in particular, for use as a transmitter and a receiver in pulse-echo applications in which a membrane is disposed in a holding means and a piezoelectric disk is placed on a main surface of the rear side of the membrane,
with the diameter of said piezoelectric disk being between 60% and 85% of the diameter of said membrane and a first substance being foamed onto said main surface of said rear side of said membrane.

2. An ultrasonic transducer according to claim 1,
characterized by,
said holding means being made with said membrane as one piece from one material.

3. An ultrasonic transducer according to claim 2,
characterized by,
said material being aluminium or an aluminium alloy.

4. An ultrasonic transducer according to claim 1 ~~one of the claims 1 to 3~~,
characterized by,
said holding means with said membrane forming a pot-shaped structure.

5. An ultrasonic transducer according to claim 1 ~~one of the claims 1 to 4~~,
characterized by,
in order to generate a center frequency of 70 kHz, the diameter of said membrane is 8.85 ± 0.02 mm, the thickness of said membrane being 0.83 ± 0.02 mm and the thickness of the ceramic being 0.26 ± 0.01 mm.

6. An ultrasonic transducer according to claim 5, characterized by,
a cylindrical holding means having a wall thickness of at least 2.85 mm and a height of approximately 6 mm being employed.

7. An ultrasonic transducer according to ~~one of the claims 1 to 6~~ claim 1, characterized by,
said piezoelectric disk being glued onto said membrane.

8. An ultrasonic transducer according to ~~one of the claims 1 to 7~~ claim 1, characterized by,
said piezoelectric disk being a piezoceramic.

9. An ultrasonic transducer according to claim 8, characterized by,

said piezoceramic having a relative dielectric constant of > 2500, an electromechanic coupling factor of > 0.5 and a mechanical quality Q of < 300.

10. An ultrasonic transducer according to ~~one of the claims 1 to 9~~ claim 1, characterized by,
said first substance being composed of a soft, open-cell material.

11. An ultrasonic transducer according to claim 10, characterized by,
said first substance being composed of a polyurethane foam or silicon foam.

12. An ultrasonic transducer according to claim 1 ~~one of the claims 1 to 10~~,
characterized by,
said first substance being composed of a polyurethane foam having a strain hardness of < 9 kPa and an acoustical loss factor of < 1.0.

13. An ultrasonic transducer according to claim 1 ~~one of the claims 1 to 12~~,
characterized by,
a second substance being provided on said first substance.

14. An ultrasonic transducer according to claim 1 ~~one of the claims 1 to 13~~,
characterized by,
a first electrode of said piezoelectric disk being connected via said membrane and said holding means with mass, and a second electrode of said piezoelectric disk being contacted via a thin wire soldered to the edge of said disk.

15. A process for fabricating an ultrasonic transducer having the following process steps:
fabrication of a pot-shaped holding means of aluminium or an aluminium alloy, the bottom of which forms a membrane,
gluing on a piezoelectric disk onto the rear side of said membrane in such a manner that a mechanical and an electric contact to said membrane are yielded,
soldering on one end of a thin wire onto said piezoelectric disk,
foaming on a first substance in said holding means on said rear side of said membrane in such a manner that said membrane and said piezoelectric disk are completely covered by said substance.

16. A process according to claim 15, characterized by,

a second substance being applied on said first substance, which is to prevent the propagation of a sound wave in the direction opposite to the desired direction of the radiating membrane.

add B2